




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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,531	10/03/2003	Jeong-Hoon Ahn	9898-270	1358
7590 12/07/2004 MARGER JOHNSON & McCOLLOM, P.C. 1030 S.W. Morrison Street Portland, OR 97205			EXAMINER ECKERT II, GEORGE C	
			ART UNIT 2815	PAPER NUMBER

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/678,531	Applicant(s) AHN ET AL.	
	Examiner George C. Eckert II	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 29-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/03/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the group I invention (claims 1-28) in the reply filed on November 9, 2004 is acknowledged. Claims 29-51 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Objections

2. Claim 8 is objected to because of the following informalities: on line 8, insert --first-- before "electrode" for reference to the previously cited element. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6-9, 11-20 and 23-28 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,563,762 to Leung et al. (hereinafter "Leung"). Regarding claim 1, Leung teaches in figure 3, a capacitor comprising;

a first electrode 134 of a first metal layer;

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a second electrode 128 of a second metal layer that is closer to the substrate 102 than the first metal layer;

a dielectric material 130 between the first and second electrodes; and

a wire 106 coupled to a bottom surface of the first electrode.

Regarding claim 2, Leung teaches that the wire 106 is formed of a third metal layer closer to the substrate than the second layer 128. Regarding claim 3, Leung teaches an alternative embodiment in figure 4 in which the wire 206/222 is formed of a same metal layer as the bottom electrode 204/220. Regarding claim 4, Leung teaches in figure 3 that the wire 106 is coupled to the first electrode through a contact hole 122. Regarding claim 6, Leung teaches the wire 106 has a planarized top surface. The limitation of claim 7 is a processing limitation that is not afforded structural weight.

Regarding claim 8, Leung teaches a wire layer 104/106 formed in a first metal layer, the wire layer including a first electrode contacting line 106;

a bottom electrode 128 formed in a second metal layer;

a top electrode 134 formed in a third metal layer, the top electrode disposed over the bottom electrode;

a dielectric layer 130 between the top and bottom electrodes and separating them; and

a contact 124 formed between the first electrode contacting line 106 and a bottom side of the top electrode 134.

Regarding claim 9, Leung teaches in figure 4 an embodiment in which a bottom electrode 204/220 is separated from a top electrode 234 by several layers of dielectric 214/216/230 such that the top electrode 234 is coupled to a contacting line 206/222 through dielectric 214/216.

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With regard to claims 11 and 13, the embodiment of figure 3 teaches the wire layer comprises a second electrode contacting line 104 which is coupled to a bottom surface of the bottom electrode 128 through a contact hole 120 in an insulating layer 114. Regarding claims 11 and 12, the embodiment of figure 4 teaches a second contacting line 204 directly coupled to the bottom electrode 228. Regarding claim 14, in both embodiments, the first and second electrode contacting lines have planarized (flat) surfaces. Regarding claims 15-17, these are processing limitations that do not structurally distinguish over Leung. Regarding claims 18 and 19, Leung teaches in figure 4 a second contact opening at 218 over the top side of the bottom electrode which contact extends further from the substrate.

Regarding claim 20, Leung teaches in figure 3 a first metal layer 104/106 including a bottom electrode 104 and an electrode contacting line 106;

a top electrode 134 formed in a second metal layer, the top electrode disposed over the bottom electrode;

dielectric layer 114/116/130 separating the bottom electrode from the top electrode; and
a contact 124 formed between the electrode contacting line 106 and a bottom side of the top electrode.

Regarding claim 21, Leung teaches that the top electrode contacts the line through a contact hole 122 in the dielectric. Regarding claims 23 and 24, Leung teaches a contact at 118 located on top of the bottom electrode which extends away from the substrate. Regarding claim 25, Leung teaches the bottom electrode and contact line have planarized (flat) surfaces. Regarding claims 26-28, these are processing limitations which do not distinguish structurally over Leung.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung as applied above in view of US 6,800,923 to Yamamoto. Leung taught the device of claims 1, 8 and 20 but did not expressly teach a plurality of separate contact holes. Yamamoto teaches, with reference to figure 1, an electrode 6 and a wiring layer 14 which are connected by a plurality of contact holes 12. Leung and Yamamoto are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form the device of Leung with a plurality of contact holes as taught by Yamamoto. The motivation for doing so, as is taught by Yamamoto, is that a greater number of holes allows for rapid charging/discharging of the capacitor (col. 5, lines 5-12). Therefore, it would have been obvious to combine Leung and Yamamoto to obtain the invention of claims 5, 10 and 22.

Conclusion


5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches various capacitor structures wherein the contacts for both the upper and lower electrodes are formed below the electrodes in a variety of configurations.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Eckert II whose telephone number is (571) 272-1728. The examiner can normally be reached on 8:00 - 5:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


GEORGE ECKERT
PRIMARY EXAMINER